



The Poultry Informed Professional

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Update on Infectious Bronchitis in the Southeastern United States

Prepared by Dr. Miguel Ruano with assistance from Drs. Naola Ferguson, Bill Stanley and Ivan Alvarado

A workshop on infectious bronchitis was held at the Poultry Diagnostic and Research Center (PDRC) of the University of Georgia. Several poultry producers, scientists, and representatives from the vaccine companies were present. Well-recognized researchers presented recent information on the different infectious bronchitis virus isolates.

Dr. Mark W. Jackwood - University of Georgia - stated that in the USA at least 9 to 12 different serotypes of infectious bronchitis virus (IBV) have been recognized. It is known that there is little or no cross-protection between serotypes and that new serotypes, called "variant strains" emerge. At the molecular level this phenomenon occurs either by inaccuracy of the viral polymerase which corrects point mutations (insertions or deletions) or recombination events between different serotypes of IBV infecting the same bird.

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Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color (\$)	128.44	118.48	135.73	136.44	131.90
Feed cost/lb meat (¢)	12.18	11.40	12.98	13.57	12.51
Days to 4.6 lbs	45	44	44	45	45
Med. cost/ton (¢)	2.79	1.87	3.00	2.80	2.88
Chick cost/lb (¢)	3.86	3.51	3.83	3.57	3.80
Vac-Med cost/lb (¢)	0.07	0.01	0.22	0.11	0.18
WB & 1/2 parts condemn. cost/lb	0.24	0.24	0.35	0.27	0.29
% mortality	4.34	4.29	4.97	4.90	5.15
Sq. Ft. @ placement	0.76	0.74	0.76	0.76	0.82
Lbs./Sq. Ft.	6.47	7.40	7.12	7.55	6.60
Down time (days)	13	10	15	13	16

Data for week ending 4/29/00

Update on Infectious Bronchitis in the Southeastern United States

Continued from Page 1

Dr. Jackwood focused on the DE-072 serotype of IBV. Using a typing approach based on the genetic code of the S1 glycoprotein that includes reverse-transcriptase polymerase chain reaction (RT-PCR) and restriction fragment length polymorphism (RFLP), he and his graduate student Chang-Won Lee found variations in the patterns of many of the field isolates of D-072 isolates since 1995. By using two types of restriction endonucleases, the *Acc I* and the *Hph I*, they were able to differentiate the typical pattern of DE-072 strain from that of the new "variants". The original DE-072 strain was restricted with the enzyme *Acc I* while the new variants were restricted with *Hph I*. They classified these isolates in three phylogenetic subgroups based upon sequence analysis: Subgroup 1 includes D-072 serotype and similar isolates; subgroup 2, the majority of the Southeastern isolates (Georgia and Alabama - now designated GA98 serotype), while subgroup 3 includes a mixture of isolates distantly related to DE-072, obtained from other states.

Finally, based on vaccine efficacy and protection studies which evaluated clinical signs and virus recovery after challenge, they found that the DE-072 vaccine afforded only partial protection against isolates of subgroups 2 and 3. In addition, they found some limited cross-protection effect between these isolates. The lack of antigenic relatedness, and poor cross-protection by the commercial DE-072 vaccine led researchers at Auburn University and The University of Georgia to place these D-072 "like" viruses into a new serotype, the **Georgia 98 (GA98)**. The GA98/CWL0470/98 will be the designated type strain.

Dr. Fred Hoerr - Auburn University - presented an update on IBV in Alabama. One isolate of the new GA 98 serotype was compared to the DE-072 strain by molecular means. There was over 96.2% of nucleotide homology and 90.5% of deduced amino acid homology. Therefore, he suggested further research on virus neutralization for antigenic relatedness, vaccine efficacy and cross-protection studies. He reported 62 DE-072 like isolates from broilers and three isolates from broiler breeders were obtained in 1999. This year, 28 isolates of the new GA98 strain were identified from broilers and one isolate from broiler breeders. He said the necropsy and histopathological signs were pneumonia, both interstitial and pleuropneumonia. Based on this evidence, the DE-072 vaccine has been approved for use in the State of Alabama.

Dr. Louise Dufour-Zavala - Georgia Poultry Laboratories - presented the current situation of IBV in the State of Georgia. Dr. Dufour reported an increase in the rate of condemnation over the USA condemnation annual average that was particularly evident during the last winter. She described the disease as a "late respiratory break", currently called "silent airsacculitis" that develops quickly. The dead birds may look like sudden death associated with pneumonia at gross examination. Besides the losses due to condemnations, the disease results in high medication costs. Dr. Dufour also summarized the IBV isolates obtained at Oakwood's Diagnostic Laboratory as follows:

Year	IBV isolates (%)							Total
	Ark. DPI	Ark. "like"	D-072	Variant	Conn.	Mass.	Unknown	
1998	72	7	2	5	5	9	0	100*
1999/00	56	1	8	3	5	11	6	90

*The PCR survey was initiated during the last part of that year.

Finally, Dr. Dufour reported some results from "relatively isolated" operations from two companies in Northeast Georgia; neither used the Arkansas or the DE-072 vaccines. The percentages of virus isolates from these farms were 42% for Ark. DPI, 3% for Ark. "like", and 9% for DE-072.

Current situation with the Arkansas serotype. Dr. M. Jackwood mentioned that the predominant virus consistently isolated from the clinical cases submitted to the PDRC was the Arkansas type virus; either Ark. DPI or Ark. "like" also called Ark. "variants". Dr. F. Hoerr also reported an overall higher isolation rate of Arkansas type virus which has been showing a trend of changing since the vaccine Ark. DPI strain has been introduced. Dr. Hoerr said that in 1997 50% of isolates were Ark. 99 and 50% were Ark. DPI. This percentage dropped to 20% for Ark. 99 and increased to 80% for Ark. DPI during 1998. Since 1999, most of the isolates were Ark. DPI.

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Dr. J. Gelb Jr. - University of Delaware - presented results on 10 IBV isolates submitted from Alabama by Dr. F. Hoerr. He said that nine out of the ten Alabama isolates amplified with the DE-072 specific primers and were more than 90% similar based on nucleotide sequence. He emphasized that his approach for characterizing these viruses was based on nucleotide sequence instead of the RFLP analysis. He concluded that all these isolates fell into the DE--072 serotype "umbrella".

In addition, Dr. Gelb described a "renal disease" associated with a novel nephropathogenic strain of IBV that was untypable by the monoclonal antibody technique. The pathological condition was found at the New Bolton Center, University of Pennsylvania in 1997. In both broilers and pullets the disease includes depression, diarrhea, and mortality ranging from 5 to 25%. In layers, visceral gout, urolithiasis, and drops in egg production have been described. In all these cases Dr. Gelb said the hallmark microscopic lesion was an interstitial nephritis. He concluded that this new serotype has been designated as **PA/Wolgemuth/98**. This virus showed a genetic relationship with the California variant of IBV and no cross-protection with the current IBV vaccines.

Mike Waits - Merial - summarized the regulatory aspects involved in live vaccine development, production, and licensing. He explained that there were two types of licenses available: full license (used under normal conditions) and conditional license (usually for emergency situations that require quick action). The overview of the conditional license procedure included: 1. Vaccine candidate development, 2. Master seed stock, 3. Check for reversion to virulence (at least five back passages), 4. Confirmatory testing at CVBL (testing for efficacy and safety), 5. Production of three pre-licensing serials, and 6. Limited field trial and confirmatory testing. Waits, finally said that at least 18 months were needed for completing these requirements.

Discussion. The main concern still remaining on the table was to know the preliminary results of the DE-072 vaccine use from field experience. Dr. J. McCarty - Schering-Plough - said that vaccination with DE-072 has helped "quite a bit" to reduce the condemnation rate, in some cases this was as good as from 10 to 1%. However, he expressed some skepticism about the combined use of three or more viruses during the grow-outs (Mass., Conn., Ark., and DE-072). Dr. J. Gelb compared this situation to that which occurred during the 80's when growers had to use Mass., Ark. and JMK combined vaccines. He said that the immune system of the birds was not capable of recognizing three related antigens and suggested that extensive interference was occurring. He said that the bottom line is still unknown. Dr. J. Smith - Fieldale Farms - said that so far it was difficult to evaluate the benefit of using the DE-072 vaccine.

Most of the discussion revolved around everyone's question: Do we need an additional and/or a new vaccine to control the GA 98 infection? Some production veterinarians and production management were using the DE-072 vaccine as a momentary alternative to decrease the high rate of condemnations. Dr. Gelb suggested the need to implement some collateral measures along with the use of the vaccine. Such measures could be: cleaning and disinfecting, heating the houses, and increasing down times. On the other hand, the need for developing a new vaccine based on a GA 98 candidate strain was evident. Dr. F. Hoerr proposed a resolution that was universally accepted. This resolution was as follows:

Resolution

GA 98 (DE 072-like) Variant Avian Infectious Bronchitis in the Southeastern United States

Whereas, The individuals listed on the attached attendance document who represent southeastern U.S. poultry producers, poultry diagnosticians, university researchers, poultry biological product companies, and state authorities met at the University of Georgia on April 11, 2000 and examined the data on the emergence of a pathogenic variant strain of avian infectious bronchitis virus called GA98 (DE 072-like) that causes mortality and condemnations in chickens in the southeastern U.S.;

Therefore, be it resolved, that we recommend as fast as possible development, review, and approval of an attenuated live vaccine for GA98 (DE 072-like) infectious bronchitis virus.

Distribution:

1. USDAAPHIS
2. USAHA Committee on Transmissible Species of Poultry and other Avian Species

Attachment:

Attendance list of a meeting held at the Poultry Diagnostic and Research Center, College of Veterinary Medicine, University of Georgia, Athens, Georgia; April 11, 2000.

Adopted: April 11, 2000

**Broiler Performance Data (Company)
Live Production Cost**

	Average Co.	Top 25%	Top 5 Cos.
Feed cost/ton w/o color (\$)	131.99	125.40	119.51
Feed cost/lb meat (¢)	12.63	11.84	11.25
Days to 4.6 lbs	45	45	45
Med. cost/ton (¢)	2.79	2.27	1.48
Chick cost/lb (¢)	3.83	3.55	3.03
Vac-Med cost/lb (¢)	0.13	0.05	0.03
WB & 1/2 parts condemn. cost/lb	0.29	0.21	0.19
% mortality	4.73	3.88	2.24
Sq. Ft. @ placement	0.77	0.75	0.77
Lbs./Sq. Ft.	6.85	6.84	7.07
Down time (days)	14	14	13

Data for week ending 4/29/00

Broiler Whole Bird Condemnation (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.327	0.422	0.202	0.295	0.260
% Airsac	0.128	0.086	0.646	0.248	0.302
% I.P.	0.076	0.058	0.109	0.069	0.139
% Leukosis	0.005	0.005	0.033	0.023	0.003
% Bruise	0.008	0.007	0.015	0.007	0.010
% Other	0.021	0.005	0.026	0.025	0.014
% Total	0.565	0.582	1.031	0.667	0.727
% 1/2 parts condemnations	0.416	0.398	0.388	0.412	0.450

Data for week ending 4/29/00

Broiler Whole Bird Condemnation (Company)

	Average Co.	Top 25%	Top 5 Co.'s
% Septox	0.302	0.313	0.318
% Airsac	0.319	0.100	0.108
% I.P.	0.095	0.046	0.040
% Leukosis	0.015	0.005	0.006
% Bruise	0.010	0.007	0.006
% Other	0.018	0.010	0.004
% Total	0.758	0.481	0.482
% 1/2 parts condemnations	0.397	0.343	0.286

Data for week ending 4/29/00



The University of Georgia is committed to the principle of affirmative action and shall not discriminate against otherwise qualified persons on the basis of race, color, religion, national origin, sex, age, physical or mental handicap, disability, or veteran's status in its recruitment, admissions, employment, facility and program accessibility, or services.

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Russia. First, the Russian economy is by all accounts recovering faster than anticipated. The International Monetary Fund (IMF) now estimates that industrial output in the first quarter of 2000 is up approximately 12 percent compared with the previous year. Much of this expansion is based on higher prices for oil and natural gas exports. Second, at the same time that industrial production is expanding, the rate of inflation has decreased. Third, the increase in shipments to the Baltic countries (Estonia and Latvia) has likely been to get products through these countries before the start of restrictions on exports to Russia using this route. The Russian customs service has declared that as of April 10, 2000, exports to Russia have to enter through specific ports if the country producing the poultry products does not have a land border with Russia.

Other markets also showed strong increases in the first 2 months of 2000. Shipments to Canada rose 62 percent from a year earlier to 27 million pounds and exports to Mexico were up almost a fourth at 54 million pounds. The market for broiler products in China continued to grow, with shipments to Hong Kong rising 4 percent from the previous year and direct shipments to China jumping by 76 percent to 28 million pounds. Shipments to Korea continue to grow rapidly as exports over the first 2 months were 230 percent higher than a year earlier.

Broiler Eggs Set In 15 Selected States Up Slightly

According to the most recent National Agricultural Statistics Service (NASS) report, commercial hatcheries in the 15-State weekly program set in incubators 184 million eggs during the week ending April 29, 2000. This was up slightly from the eggs set the corresponding week a year earlier. Average hatchability for chicks hatched during the week was 82 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler Chicks Placed Up 1 Percent

Broiler growers in the 15-State weekly program placed 149 million chicks for meat production during the week ending April 29, 2000. Placements were up 1 percent from the comparable week in 1999. Cumulative placements from January 2, 2000, through April 29, 2000, were 2.48 billion, up 1 percent from the same period a year earlier.

March Egg Production Up 2 Percent

U.S. egg production totaled 7.22 billion during March 2000, up 2 percent from the 7.05 billion produced in 1999. Production included 6.10 billion table eggs and 1.12 billion hatching eggs, of which 1.05 billion were broiler-type and 67.0 million were egg-type. The total number of layers during March 2000 averaged 331 million, up 2 percent from the total average number of layers during March 1999. March egg production per 100 layers was 2,182 eggs, down slightly from 2,185 eggs in March 1999.

Broilers Exports Soar in February

According to the most recent USDA Economic Research Service (ERS) report, U.S. broiler exports reached a record 625 million pounds in February, 73 percent above a year earlier. The February 2000 exports were also more than 100 million pounds higher than the previous record for a single month. The record exports follow a high level of exports in January (454 million pounds). Exports for the first 2 months of 2000 totaled almost 1.1 billion pounds, over 50 percent higher than the same period in 1999.

Although the increase in exports was not confined to any one area or region, the largest increases were to the Russian market. Much higher exports were also reported to Estonia and Latvia. The Russian market accounted for more than half of the 1.1 billion pounds exported so far this year. There are several reasons for the large shipments to

Russia. First, the Russian economy is by all accounts recovering faster than anticipated. The International Monetary Fund (IMF) now estimates that industrial output in the first quarter of 2000 is up approximately 12 percent compared with the previous year. Much of this expansion is based on higher prices for oil and natural gas exports. Second, at the same time that industrial production is expanding, the rate of inflation has decreased. Third, the increase in shipments to the Baltic countries (Estonia and Latvia) has likely been to get products through these countries before the start of restrictions on exports to Russia using this route. The Russian customs service has declared that as of April 10, 2000, exports to Russia have to enter through specific ports if the country producing the poultry products does not have a land border with Russia.

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All layers in the U.S. on April 1, 2000 totaled 331 million, up 3 percent from a year ago. The 331 million layers consisted of 271 million layers producing table or commercial type eggs, 57.3 million layers producing broiler-type hatching eggs, and 2.84 million layers producing egg-type hatching eggs. Rate of lay per day on April 1, 2000, averaged 70.9 eggs per 100 layers, down slightly from the 71.0 a year ago.

Laying flocks in the 30 major egg producing States produced 6.79 billion eggs during March, up 2 percent from March 1999. The average number of layers during March, at 311 million, was up 2 percent from a year earlier.

Egg-Type Chicks Hatched Down 4 Percent

Egg-type chicks hatched during March totaled 39.6 million, down 4 percent from March 1999. Eggs in incubators totaled 33.2 million on April 1, 2000, down 11 percent from a year ago. Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 286,000 during March 2000, up 11 percent from March 1999.

Broiler Hatch Up Slightly

The March 2000 hatch of broiler-type chicks, at 756 million, was up slightly from March of the previous year. There were 633 million eggs in incubators on April 1, 2000, up 1 percent from a year earlier.

Leading breeders placed 7.31 million broiler-type pullet chicks for future domestic hatchery supply flocks during March 2000, up slightly from March 1999.

Turkey Eggs in Incubators on April 1 Down 3 Percent From Last Year

Turkey eggs in incubators on April 1, 2000, in the United States totaled 32.6 million, down 3 percent from April 1 a year ago. Eggs in incubators were up 5 percent from the March 1 total of 31.1 million. Regional changes from the previous year were: East North Central, down 5 percent; West North Central, down 13 percent; North and South Atlantic, up 6 percent; South Central, up 6 percent; and West, unchanged.

Poults Placed During March Down 1 Percent From Last Year

The 25.8 million poults placed during March 2000 in the United States were down 1 percent from the number placed during the same month a year ago. Placements were up 7 percent from the February total of 24.2 million. Regional changes from the previous year were: East North Central, down 4 percent; West North Central, down 3 percent; North and South Atlantic, up 4 percent; South Central, up 3 percent; and West, down 4 percent.

Meetings, Seminars and Conventions

2000 May

May 19-20: Kentucky/Tennessee Poultry Meeting, Bowling Green, Ky. Contact: Carole Knoblett, Kentucky Poultry Federation, P.O. Box 21829, Lexington, Ky. 40522-1829. Phone: 606-266-8375.

May 20: GPF Night of Knights, Cobb Galleria Center, Atlanta, GA. Contact: Georgia Poultry Federation, P.O. Box 763, Gainesville, GA 30503. Phone: 770-532-0473.

May 23-25: Multi-State Poultry Feeding and Nutrition Conference and BASF Technical Symposium, (sponsored by Michigan State University, The Ohio State University, Purdue University, University of Illinois at Urbana-Champaign, University of Kentucky, and BASF Corp.) Location: Marriott Hotel, Indianapolis, Indiana. Contact: Tom Robertson, Division of Conferences, Purdue University, 1586 Stewart Center, Room 116, West Lafayette, IN 47907-1586. Phone: 765-494-7220 or 800-359-2968 Ext. 92R, Fax: 765-494-0567.

2000 June

June 1-3: AP&EA Convention, Birmingham, AL. Contact: Alabama Poultry & Egg Association, P.O. Box 240, Montgomery, AL 36101-0240. Phone: 334-265-2732

June 2-3: Georgia Veterinary Medical Assn. Poultry Program, The Resort at Sandestin, Destin, Florida. Contact: GVMA 770-416-1633 or Fax: 770-416-9095. E-Mail: gvma@mindspring.com

June 9-10: Arkansas Poultry Festival, Arlington Hotel, Hot Springs, Ark. Contact: Judy Kimbrell, Poultry Federation, P.O. Box 1446, Little Rock, Ark. 72203. Phone: 501-375-8131

June 9-10: Delmarva Chicken Festival, Historic Downtown Berlin, Maryland. Contact: Connie Parvis, Delmarva Poultry Industry, Inc. R.D.G., P.O. Box 47, Georgetown, DE 19947-9575. Phone: 302-856-9037. Fax: 302-856-1845.

2000 July

July 2-6: Xth International Congress on Animal Hygiene, Maastricht, The Netherlands. Contact: Royal Netherlands Veterinary Association, P.O. Box 14031, NL-3508 SB Utrecht, The Netherlands. Fax: +31 30 251 1787

July 6-14: XXth Gala International Symposium/Workshop on Rapid Methods and Automation in Microbiology. Manhattan, Kansas. Contact: Daniel Y.O. Fung, Kansas State University, Manhattan, KS 66506-1600. Phone: 785-532-5654; Fax: 785-532-5681; dfung@oz.oznet.ksu.edu: <http://www.dec.ksu.edu/dec/con/microciology>

July 18-19: U.S. Poultry and Egg Hatchery-Breeder Clinic, Birmingham, Alabama. For information check the US POULTRY website at www.poultryegg.org or contact 1530 Cooledge Road, Tucker, GA 30084-7303. Phone: 770-493-9401; Fax: 770-493-9257. E-mail: research@poultryegg.org.

July 22-26: AVMA 137th Annual Convention, Salt Lake City, Utah. Contact: American Veterinary Association, 1931 North Meacham Road, Schaumburg, IL 60173. Phone: 847-925-8070, Fax: 847-925-1329.

2000 August

Aug. 12-15: International Conference on Animal Science and Veterinary Medicine 'Towards the 21st Century', Beijing, China. Contact: Ms Xu Jinhua, Organising Committee of ICASVM 2000, Institute of Animal Science, Chinese Academy of Agricultural Sciences, No. 2 Yuanming Xilu Road, Beijing 100094, China.

Aug. 19-21: 89th Annual Meeting - Poultry Science Association, Preceding XXII World's Poultry Congress. Montreal's Convention Centre, Montreal, Quebec. See PSA website for more information. <http://www.psa.uluc.edu/meet/psa2000/psa2000.html>

Aug. 20-25: XXI World's Poultry Congress, Convention Centre, Montreal, Quebec, Canada. Contact: Rosaleen Rinzler, WPC 2000 Congress Secretariat, Events International Meeting Planners Inc., 759 Victoria Square, Suite 300, Montreal,

Quebec, Canada H2Y 2J7. Phone: 514-286-0855.

2000 September

Sept. 20-21: U.S. Poultry and Egg Poultry Production and Health Seminar, Birmingham, Alabama. For information check the US POULTRY website at www.poultryegg.org or contact 1530 Cooledge Road, Tucker, GA 30084-7303. Phone 770-493-9401; Fax: 770-493-9257; e-mail: training@poultryegg.org

Sept. 27-29: VIV America Latina, International Trade Show for Intensive Animal Production and Processing, Expo Center Norte, Sao Paulo, SP Brazil. Contact: Royal Dutch Jaarbeurs Brasil, Phone: +55 15 262 3133; Fax: +55 15 262 3575; E-mail: rdjbr@uol.com.br

2000 October

Oct. 18-20: National Meeting on Poultry Health and Processing, Sheraton Ocean City, Ocean City, Maryland. Sponsored by Delmarva Poultry Industry, Inc. Contact: Sharon Webb. Phone: 302-856-9037; Fax: 302-856-1845; E-mail: dpi@cc.net

2000 November

Nov. 7-10: Expoaviva, International Poultry & Livestock Technology Show, Montjuic Trade Fair Center, Fira de Barcelona, Spain. Contact: F. Xavier Castells, Manager, Expoaviva, Avda. Reina Mo.Cristina, s/n 08004 Barcelona, Spain. Fax: +34 93 23 32602.

Nov. 14-16: XVI Central America Poultry Congress, Hotel El Panama, Ciudad de Panama, Panama. Contact: Dr. Evelio Quiroz, Presentente APECA, Apartado No 6-3994, Estafeta El Dorado, Panama. Fax: +507 261 1352

Nov. 27: Coccidiosis 2000, Hannover, Germany. Contact: Elaine Robson, Conference Organizer, Positive Action Conferences, P.O. Box 4, Driffield, East Yorkshire YO25 9D1 England. Phone: +44 (0) 1377-256316; Fax: +44 (0) 1377-254663.